



<110> Vrijic, Marina
Eggeling, Lothar
Sahm, Harmann

<120> PROCESS FOR THE MICROBIAL PRODUCTION OF AMINO ACIDS BY BOOSTED
ACTIVITY OF EXPORT CARRIERS

<130> FJ 122 - sequence listing

<140> 09/105,117

<141> 1998-06-17

<150> PCT/DE96/02485

<151> 1996-12-18

<150> 195 48 22.0

<151> 1995-12-22

<160> 3

<170>MS DOS text only - saved from Word 6.0

<210> 1

<211> 290

<212> DNA

<213> Corynebacterium glutamicum

Table 1

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Helix-Turn-Helix-Motiv
TQPAKATEAG EVLVQAARKM VLLQAETKAQ LSGRLAEIPL TIAINADSLS 100
TWFPFVFNEV ASWGGATLTL RLEDEAHTLS LLRRGDVLGA VTREANPVAG 150
CEVVELGTMR HLAIATPSLR DAYMVDGKLD WAAMPVLRFG PKDVLQDRDL 200
DGRVDGPVGR RRVSI VPSAE GFGEAIRRGL GWGLLPETQA APMLKAGEVI 250
LLDEIPIDTP MYWQRWRLES RSLARLTDAV VDAAIEGLRP 290

<210> 2

<211> 2374

<212> DNA

<213> Corynebacterium glutamicum

Table 2

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 120
 /LysG
 GGAATTGGAA AAGTCTTCAT TGATTCCGGC GTTAGGGAGC TAACGACGTA GTTGCTGCCG
 P R L G E I A A D V V A
 180
 CAGACACTCA GATCGATCTC TAGATCTAAG GTCCGCGGTA GCAACGGTTA TGTAGCCACA
 D T L R A L S R S E L R W R Q W Y M P T
 240
 CAGTTACCCA TAGAGTAGCT CCTCCTAGTG AAGAGGACGA AAATCGTACC CTCGTCGAAC
 D I P I E D L L I V E G A K L M P A A Q
 300
 CCAAAGCCCT TCTTCAGGGG TTGGTTCCGG AGCCGCTTAA CGGAGTGGTT TTGGAAGGCG
 T E P L L G W G L G R R I A E G F G E A
 360
 GCTGCCCTGT TACCTATGCG CGGACGCGGG GTGTCCTGGT AGCTGCGCGG GCAGGTCCAG
 S P V I S V R R R G V P G D V R G D L D
 420
 TGCCAGAACT TCGTGTAGAA ACCCTGGCTT CGCATTCTGC CCGTAGCGTC GGGTTAGATC
 R D Q L V D K P G F R L V P M A A W D L
 480
 AAAGGGTAGT TGGTACATCC GTAGGGCGTT ACTCCCCCAA CGTTACCGGT TCACCGCGTA
 K G D V M Y A D R L S P T A I A L H R M
 540
 CCAAGGTTCA AGATGATGAA GTGTAGGGCG GTGCCCTAAT CGAAGTGCCC AATGGCGAGG
 T G L E V V E C G A V P N A E R T V A G
 600
 ATTTTGTAGA GGTGCGGCGT CGTTCCTATT ACACACGCGA AGTAGAAGGT TCGCGTCGCA
 L V D G R R L L S L T H A E D E L R L T
 660
 CTCGCAACGA GGTGGGGTTC TTCGATGGAG CAACTTGTGC CCTCCTTTGG TACACCTATC
 L T A G G W S A V E N F V P P F W T S L
 720
 GCTTAGACGC AACTACCGCT ACCAATTGCC CTAAAGTCGT TCCGCAGGTC TATCAACGCG
 S D A N I A I T L P I E A L R G S L Q A
 780
 AAATCAAAGA CGAACGTCGT TGTGGTAAAA GGCGCGACGA ACGTGTTCCT GAAGTGGGCG
 K T E A Q L L V M K R A A Q V L V E G A
 840
 AAGCCAACGA AACC GGCCAA CCCACGCGCT ATGGTTGTGA GCTGGGTGCA CTACGAGCTC
 E T A K A P Q T R S V L V R G V H H E L
 900
 TCGAAATTGC GCGACTGAGT GCGGGCTCCC CCTTTACCTT TCCCGATTCC TCCGCGGAAG
 A K V R Q S V A S P S I S L A L S A G E
 RCGS 960
 <---LysG
 CTTCGACGGA AGTAGTTACT AACTCTCGTT TCACAGGTC AACTTACCCC AAGTA---5'
 5' ---TGCCTTCATCAATGATTGAGAGCAAAGTGTCCAGTTGAATGGGGTTCATGAAGCT
 F S G E D I I S L L T D L Q I P N M

RBS 1020
 ATATTAAACC ATGTTAAGAA CCAATCATTT TACTTAAGTA CTTCCATAGG TCACGATGGT
 M V
 LysE-->
 1080
 GATCATGGAA ATCTTCATTA CAGGTCTGCT TTTGGGGGCC AGTCTTTTAC TGTCCATCGG
 I M E I F I T G L L L G A S L L L S I G
 1140
 ACCGCAGAAT GACTGGTGA TTAAACAAGG AATTAAGCGC GAAGGACTCA TTGCGGTTCT
 P Q N V L V I K Q G I K R E G L I A V L
 1200
 TCTCGTGTGT TTAATTTCTG ACGTCTTTTT GTTCATCGCC GGCACCTTGG GCGTTGATCT
 L V C L I S D V F L F I A G T L G V D L
 1260
 TTTGTCCAAT GCCGCGCCGA TCGTGCTCGA TATTATGCGC TGGGGTGGCA TCGCTTACCT
 L S N A A P I V L D I M R W G G I A Y L
 1320
 GTTATGGTTT GCCGTCATGG CAGCGAAAGA CGCCATGACA AACAAGGTGG AAGCGCCACA
 L W F A V M A A K D A M T N K V E A P Q
 1380
 GATCATTGAA GAAACAGAAC CAACCGTGCC CGATGACACG CCTTTGGGCG GTTCGGCGGT
 I I E E T E P T V P D D T P L G G S A V
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 1440
 GGCCACTGAC ACGCGCAACC GGGTGCGGGT GGAGGTGAGC GTCGATAAGC AGCGGGTTTG
 A T D T R N R V R V E V S V D K Q R V W
 1500
 GGTAAGCCC ATGTTGATGG CAATCGTGCT GACCTGGTTG AACCCGAATG CGTATTTGGA
 V K P M L M A I V L T W L N P N A Y L D
 1560
 CGCGTTTGTG TTTATCGGCG GCGTCGGCGC GCAATACGGC GACACCGGAC GGTGGATTTT
 A F V F I G G V G A Q Y G D T G R W I F
 1620
 CGCCGCTGGC GCGTTCGCGG CAAGCCTGAT CTGGTTCCCG CTGGTGGGTT TCGGCGCAGC
 A A G A F A A S L I W F P L V G F G A A
 1680
 AGCATTGTCA CGCCCGCTGT CCAGCCCCAA GGTGTGGCGC TGGATCAACG TCGTCGTGGC
 A L S R P L S S P K V W R W I N V V V A
 1740
 >>>>>>> <<<<<<<< /orf3
 - N E R T K
 5' CTAC TGGCGTAACC GGTAGTTTGA CTACAACTAC CCAATCAAAA GCGCCCAAAA
 AGTTGTGATG ACCGCATTGG CCATCAAACCT GATGTTGATG GGTTAGTTTT CGCGGG 5'
 V V M T A L A I K L M L M G -
 LysE / >>>>>
 1800
 CCTTAGCCAC CGGAAGCGGG TTTACAACTA CGGCCGCAGC ACCCTTTAGA GTAGCTAGCG
 S D T A K A W I N I G A D H S I E D I A
 <<<<<<<<
 1860
 GAGGTTGAGC CGCAGTCTTT TGAGGTTCAA CAACTCACTT AGTTCCGACA ACAGGTCGAC
 E L E A D S F E L N N L S D L S N D L Q

1920
 GAGTTGACTG CTTCGTGGTT AGTTACGTGA CCAGTGCCAT AGGCGCGGCA TGAGAGGAAC
 E V S S A G I L A S T V T D A G Y E G Q
 1980
 GAGCGCGTCG TGGGTACGTT CGCGGTAGAC GCGTTCCTG ACGGGCGCAA GGACCCGCTA
 E R L V W A L A M Q A L S Q G R E Q A I
 2040
 CAGTAACTCG AACGCCTGGT ATAGTTATAA CAAGTGCAAG TTGTACGGGA GTCTGTCCTT
 D N L K R V M D I N N V N L M G E S L S
 2100
 GAATGGGACC GACCGCGCCC TTGGGAGACC TTAAGGTAGC TCTATAAACA GGCACCTCGTC
 K G Q S A R S G E P I G D L Y K D T L L
 2160
 CGGGACGCGT TCACCACTCT TTCGTTACTG CGGTTCTGGT AACAAACGTC GACTGACGTT
 G Q A L P S F A I V G L G N N A A S Q L
 2220
 GTTCAAGAGT GGCAGTAGCG GGCCAAGGAG GTGGGTGCT AATTACTACC TTATCGAACC
 L N E G D D G P E E V W R N I I S Y S P
 2280
 GACTACTTAG TCTTCGCCCC TCGGGAGGAG GCGGTACTTG AGTCGGCGGA GGCGACACTC
 Q H I L L P C G E E A M F E A A E A T L
 2340
 GAGACCTGGC ATCCTTCTTT ATGGGTGCAT TTCTCGGAAA GGTCTGCGTT GTTACAGTGC
 E P G Y S S I G V Y L A K G S A V I D R
 2374

/-orf3+

GTTACGCATG TACCAAAGAA GGTTCCTCA TAGA
 L A Y M T E E L P T D

<210> 3
 <211> 236
 <212> DNA
 <213> *Corynebacterium glutamicum*

Table 3

MVIMEIFITG LLLGASLLLS IGPQNVLVK QGIKREGLIA VLLVCLISDV 50
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 FLFIAGTLGV DLLSNAAPIV LDIMRWGGIA YLLWFAVMAA KDAMTNKVEA 100
 TMH3
 PQIIEETEPT VPDDTPLGGS AVATDTRNRV RVEVSVDKQR VWVKPMLMAI 150
 VLTWLNPNAY LDAFVFIGGV GAQYGDTRGW IFAAGAFAS LIWFPLVGFG 200
 TMH4 TMH5
 AAALSRLSS PKVWRWINVV VAVVMTALAI KLMLMG 236
 TMH6